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EXAMINER	
GODBOLD, DOUGLAS	

ART UNIT	PAPER NUMBER
2626	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/783,518	ROTH ET AL.	
	Examiner	Art Unit	
	Douglas C. Godbold	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *19-25 and 27* is/are allowed.

6)☐ Claim(s) *1-18, 26 and 28-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20040920, 20051205, 20060502*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to application 10/783,518 filed on February 20, 2004. Claims 1-33 are pending in the application and have been examined.

Priority

2. This application claims priority to US application 60/449,195 filed February 21, 2003. This priority date has been considered in the application.

Information Disclosure Statement

3. The Information Disclosure Statements filed September 20, 2004, December 5, 2005, and May 2, 2006 have been considered in this office action.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

5. Claim 1-3, and 5-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: Initializing the choice list with a transcript before a transcript is retrieved from said choice list in line 7 of the claim.

Claim 4 includes this step, but claims 2-3, and 5-12 do not. Therefore claims 1-3, and 5-12 are rejected under 35 U.S.C. 112.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 30-32 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 30 attempts to claim a computer readable medium. However, this may be interpreted as merely a carrier wave which is considered non-statutory subject matter under 35 U.S.C. 101. Claims 31 and 32 are also rejected for the same reasons, as they are dependent of claim 30.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 1-6, 13-17, 26, 28, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (US Patent 6,760,720) in view of Baker et al (US Patent 5,680,511).

12. Consider claim 1, Chen teaches a method of constructing a choice list of alternate versions of a recognized transcript from a speech recognition system (method for generating candidate word strings, abstract), said method comprising:

generate an alternative version of the transcript (Then, the node sets with relative high string scores are selected to connect the nodes by their starting time frame and ending time frame, thereby generating the candidate word strings, abstract.); and,

adding the alternative version of the transcript to the choice list (Then, the node sets with relative high string scores are selected to connect the nodes by their starting time frame and ending time frame, thereby generating the candidate word strings, abstract. Multiple strings are generated, see table 1.).

But Chen does not specifically teach:

during speech recognition, generating a list of close call records, wherein each record includes histories for each of two competing partial hypotheses;

initializing the close call list from at least one output of the speech recognition system;

selecting one of the close call records from the list of close call records;

selecting a transcript from the choice list;

determining whether one of the two histories for the selected record matches a partial subhistory of the transcript from the choice list;

if one of the two histories for the selected close call record matches a partial subhistory of the transcript, substituting the other of the two histories for the partial subhistory of the transcript to generate an alternative string candidate.

In the same field of word-by-word speech recognition, Baker teaches:

during speech recognition, generating a list of close call records, wherein each record includes histories for each of two competing partial hypotheses (The choice list generator 14 couples to the data string memory 12 and generates a plurality of choice words 20. The system 10 offers the list of choice words 20, as possible substitutes for the current word 38 being analyzed by the system 10; column 9 line 10.);

initializing the close call list from at least one output of the speech recognition system (The choice list generator 14 couples to the data string memory 12 and generates a plurality of choice words 20. The system 10 offers the list of choice words 20, as possible substitutes for the current word 38 being analyzed by the system 10; column 9 line 10. The list must be initialized when considered a word in the string.);

selecting one of the close call records from the list of close call records (A record from the choice word list of Baker must inherently be selected in order to substitute.);

selecting a transcript from the choice list (an utterance must inherently be selected in order to replace words in it);

determining whether one of the two histories for the selected record matches a partial subhistory of the transcript from the choice list (The current word 38 being recognized can be transferred via the bus interface 48 to the processing unit 48. The processing unit 48 can, in one example, analyze the known information about the current word 38 to select choice words 20A-20E from the vocabulary memory 50; column 13, line 18.);

if one of the two histories for the selected close call record matches a partial subhistory of the transcript, substituting the other of the two histories for the partial subhistory of the transcript to generate an alternative string candidate (Alternatively, the word recognition system 10 can select the choice word 20 with the highest probability signal 28 or rank signal 30 to substitute for the current word 38 currently being recognized; column 17, line 24.).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the word substitutions of Baker with the String candidate generation method of Chen in order to allow for substitutions of words that may have been misinterpreted in the transcription process.

13. Consider claim 2, Baker teaches the method of claim 1, further including generating a list of close call records, wherein each record includes histories for each of two competing word-ending partial hypotheses (The choice list generator 14 couples to the data string memory 12 and generates a plurality of choice words 20. The system 10 offers the list of choice words 20, as possible substitutes for the current word 38 being analyzed by the system 10. The choice list generator 14 generates for each choice word 20 an associated probability signal 32 that indicates the likelihood that the choice word 20 represents the current word 38 being recognized; column 9 line 10.).

14. Consider claim 3, Chen teaches the method of claim 2, further including generating a list of close call records, wherein each record includes histories for each of two competing word-ending partial hypotheses, both seeding a common word (Figure 1 shows nodes n2 n6 and n9 all seeding to either n3 or n7. Nodes represent words in this figure.).

15. Consider claim 4, Chen teaches the method of claim 1, further including initializing the choice list with the recognized transcript (method for generating candidate word strings, abstract. In order to generate strings, they must be stored in a list and it is inherent that the list would be initialized.).

16. Consider claim 5, the method of claim 1,Chen teaches further including initializing the choice list with all active, legal word ending hypotheses (Figure 1 shows

two separate ending nodes being considered for the node lattice. Therefore multiple word-ending hypothesis are considered.).

17. Consider claim 6. The method of claim 1, further including comparing the close call record selected from the close call list against each transcript in the choice list (It would have been obvious to one of ordinary skill in the art to repeat this technique for every transcription on the list created by Chen.)

18. Consider claim 13, Chen teaches a method of constructing a list of alternate versions of a recognized transcript (method for generating candidate word strings, abstract), said method comprising:

adding the recognized transcript to a choice list (method for generating candidate word strings, abstract. In order to generate strings, they must be stored in a list and it is inherent that the list would be initialized with a recognized transcript.);

for each entry on the choice list (It would have been obvious to one of ordinary skill in the art to repeat this technique of Baker for every transcription on the list created by Chen.),

generating an alternative version of the transcript (Then, the node sets with relative high string scores are selected to connect the nodes by their starting time frame and ending time frame, thereby generating the candidate word strings, abstract.); and,

(c) adding the alternative version of the transcript to the choice list (Then, the node sets with relative high string scores are selected to connect the nodes by their starting time frame and ending time frame, thereby generating the candidate word strings, abstract. Multiple strings are generated, see table 1.) and

two partial hypothesis that seed a common word (Figure 1 shows nodes n2 n6 and n9 all seeding to either n3 or n7. Nodes represent words in this figure.).

Chen does not teach:

during speech recognition, generating a list of close call records, wherein each record includes histories for each of two competing partial hypothesis;

selecting a record from the close call list;

(a) determining whether one of the two histories for the selected record matches a partial subhistory of that entry on the choice list;

(b) if one of the two histories for the selected record matches a partial subhisory of that entry, substituting the other of the two histories for the partial subhistory of that entry to generate an alternative version of the transcript.

In the same field of word-by-word recognition, Baker teaches:

during speech recognition, generating a list of close call records, wherein each record includes histories for each of two competing partial (The choice list generator 14 couples to the data string memory 12 and generates a plurality of choice words 20. The system 10 offers the list of choice words 20, as possible substitutes for the current word 38 being analyzed by the system 10; column 9 line 10; Baker.);

selecting a record from the close call list (a word must inherently be selected in order to process and replace it);

(a) determining whether one of the two histories for the selected record matches a partial subhistory of that entry on the choice list (The current word 38 being recognized can be transferred via the bus interface 48 to the processing unit 48. The processing unit 48 can, in one example, analyze the known information about the current word 38 to select choice words 20A-20E from the vocabulary memory 50; column 13, line 18.);

(b) if one of the two histories for the selected record matches a partial subhistory of that entry, substituting the other of the two histories for the partial subhistory of that entry to generate an alternative version of the transcript (Alternatively, the word recognition system 10 can select the choice word 20 with the highest probability signal 28 or rank signal 30 to substitute for the current word 38 currently being recognized; column 17, line 24.).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the word substitutions of Baker with the String candidate generation method of Chen in order to allow for substitutions of words that may have been misinterpreted in the transcription process.

19. Consider claim 14, Baker teaches the method of claim 13, further comprising: selecting another record from the close call list; and, for each entry on the choice list, repeating steps (a) (b) and (c). (Figure 1, Baker shows multiple choice lists entries 22,

that are considered against the words in the selected sentence. Therefore multiple iterations of consideration must be done.).

20. Consider claim 15, Chen teaches a method of constructing a list of alternate transcripts from a recognized transcript (method for generating candidate word strings, abstract), comprising:

performing speech recognition on a spoken transcripts to generate a best scoring hypothesis (Then, the node sets with relative high string scores are selected to connect the nodes by their starting time frame and ending time frame, thereby generating the candidate word strings, abstract.), wherein performing speech recognition involves at each of a plurality of different times throughout the transcript generating two partial hypotheses each seeding a common word (Figure 1, N2 and N6 are two different hypothesis that both seed word not N3), said two partial hypotheses including a primary hypothesis having a first score and corresponding to a primary partial history (N2 has a high score of –164, and would be chosen first; column 3, line 50.) and a competing hypothesis having a second score and corresponding to a competing partial history (N6 has a lower score of –170.);

at each of the plurality of different times, storing a close call record, wherein said close call record includes the primary partial history, the competing partial history, and a measure of how close the two competing hypotheses are (Figure 1, this lattice is stored, and it shows words leading to N2 and N6 and also the associated scores, which are a measure of how close they are.);

Chen does not specifically teach:

after performing speech recognition, using the stored close call records to generate a choice list of alternative versions of the best scoring hypothesis

In the same field of generating alternatives, Baker teaches after performing speech recognition, using the stored close call records to generate a choice list of alternative versions of the best scoring hypothesis (The choice list generator 14 couples to the data string memory 12 and generates a plurality of choice words 20. The system 10 offers the list of choice words 20, as possible substitutes for the current word 38 being analyzed by the system 10; column 9 line 10. Alternatively, the word recognition system 10 can select the choice word 20 with the highest probability signal 28 or rank signal 30 to substitute for the current word 38 currently being recognized; column 17, line 24.)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the Substitutions of Baker with the candidate generation of Chin in order to allow for the list to be expanded to allow for words that may have been mistranslated.

21. Consider claim 16, Chen teaches a method of constructing a list of alternate transcript from a recognized utterance (method for generating candidate word strings, abstract), comprising:

storing the one or more alternate transcripts in a choice list (Then, the node sets with relative high string scores are selected to connect the nodes by their starting time

frame and ending time frame, thereby generating the candidate word strings, abstract. Multiple strings are generated, see table 1.).

and using partial hypothesis seeding a common word (Figure 1 shows nodes n2 n6 and n9 all seeding to either n3 or n7. Nodes represent words in this figure.)

But Chen does not specifically teach:

generating a list of close call records, wherein each record includes history information and scoring information associated with a particular pair of partial hypotheses;

generating one or more alternate transcripts from the list of close call records by evaluating each record in the list for a match between a partial sub-history of the recognized utterance and one of the histories stored in the record, and upon finding such a match, substituting the other of the histories stored in the record for the partial sub-history in the recognized transcript.

In the same field of word-by-word recognition, Baker teaches:

generating a list of close call records, wherein each record includes history information and scoring information associated with a particular pair of partial hypotheses (The choice list generator 14 couples to the data string memory 12 and generates a plurality of choice words 20. The system 10 offers the list of choice words 20, as possible substitutes for the current word 38 being analyzed by the system 10; column 9 line 10; Baker.);

generating one or more alternate transcripts from the list of close call records by evaluating each record in the list for a match between a partial sub-history of the

recognized utterance and one of the histories stored in the record, and upon finding such a match, substituting the other of the histories stored in the record for the partial sub-history in the recognized transcript (The current word 38 being recognized can be transferred via the bus interface 48 to the processing unit 48. The processing unit 48 can, in one example, analyze the known information about the current word 38 to select choice words 20A-20E from the vocabulary memory 50; column 13, line 18. Alternatively, the word recognition system 10 can select the choice word 20 with the highest probability signal 28 or rank signal 30 to substitute for the current word 38 currently being recognized; column 17, line 24.).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the word substitutions of Baker with the String candidate generation method of Chen in order to allow for substitutions of words that may have been misinterpreted in the transcription process.

22. Consider claim 17, Baker teaches a method according to claim 16, further including generating additional alternate transcripts by evaluating each record in the list of close call records for a match between a partial sub-history of each alternate utterance in the choice list and one of the histories stored in the record, and upon finding a match, substituting the other of the histories stored in the record for the partial sub-history in the alternate transcript; and, storing the additional alternate transcripts in the choice list (Alternatively, the word recognition system 10 can select the choice word 20 with the highest probability signal 28 or rank signal 30 to substitute for the current

word 38 currently being recognized; column 17, line 24. As this analysis is done word by word, a choice list is generated for each word considered, so this process is repeated until all words in the utterance have been considered.)

23. Consider claim 26, Chen teaches a method of creating an alternate utterance hypothesis from a complete utterance hypothesis (method for generating candidate word strings, abstract), comprising:

for a first partial hypothesis having an associated first score and a second partial hypothesis having an associated second score being less than the first score (Figure 1, nodes N2 and N6 represent two words, N6 has lower score of –170 than N2 of –164.), both ending at a common time (nodes N2 and N6 both end at frame 64) and both seeding a common continuation word (both N2 and N6 seed word N3.), storing information characterizing the first partial hypothesis and the second partial hypothesis at each frame following the seeding of the common continuation word, the information including at least a history of the first partial hypothesis and a history of the second partial hypothesis (Figure 1, this lattice is stored, and it shows words leading to N2 and N6 and also the associated scores, which are a measure of how close they are. The lattice also shows the node leading up to nodes N2 and N6, being the history.).

But Chen does not specifically teach:

comparing a set of first words from the first hypothesis and a set of first words from the complete utterance hypothesis; and,

if a set of first words from the history of the first partial hypothesis matches a set of first words from the complete utterance hypothesis, substituting the history of the second partial hypothesis for the history of the first partial hypothesis within the complete utterance hypothesis.

In the same field of word hypotheses, baker teaches comparing a set of first words from the first hypothesis and a set of first words from the complete utterance hypothesis (The current word 38 being recognized can be transferred via the bus interface 48 to the processing unit 48. The processing unit 48 can, in one example, analyze the known information about the current word 38 to select choice words 20A-20E from the vocabulary memory 50; column 13, line 18.); and,

if a set of first words from the history of the first partial hypothesis matches a set of first words from the complete utterance hypothesis, substituting the history of the second partial hypothesis for the history of the first partial hypothesis within the complete utterance hypothesis (Alternatively, the word recognition system 10 can select the choice word 20 with the highest probability signal 28 or rank signal 30 to substitute for the current word 38 currently being recognized; column 17, line 24.).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the word substitutions of Baker with the String candidate generation method of Chen in order to allow for substitutions of words that may have been misinterpreted in the transcription process.

24. Consider claim 28, Baker teaches a method according to claim 26, further including generating the first score and the second score based at least upon input acoustic data and a set of language models (Continuing with the above example of an current word 38 having the letter string "ORSE," the choice list generator 14, can match the identified string with stored vocabulary words. The word 38 could, for example, be associated with any of the vocabulary words gorse, horse, norse, morse, or worse, stored in the vocabulary memory 50; column 13, line 22. In one embodiment the choice list generator can employ a uni-gram model to select choice words 20 as a function of their rate of occurrence in the English language; column 13, line 33.).

25. Consider claim 29, Chen teaches a method according to claim 26, further including comparing the set of first words of the history of the first partial hypothesis to the set of words from the complete utterance hypothesis, wherein the set of words from the complete utterance hypothesis includes all of the words from the first partial hypothesis (Figure 1 shows partial hypothesis ending in N2 and N6, but it is also shown that these hypothesis N1 and N5 respectively.).

26. Consider claim 30, Chen a computer readable medium including stored instructions adapted for execution on a processor (a computer readable medium is inherent to enable the method), comprising:

instructions for storing the one or more alternate transcripts in a choice list (Then, the node sets with relative high string scores are selected to connect the nodes by their

starting time frame and ending time frame, thereby generating the candidate word strings, abstract. Multiple strings are generated, see table 1.).

and instructions for using partial hypothesis seeding a common word (Figure 1 shows nodes n2 n6 and n9 all seeding to either n3 or n7. Nodes represent words in this figure.)

But Chen does not specifically teach:

instructions for generating a list of close call records, wherein each record includes history information and scoring information associated with a particular pair of partial hypotheses;

instructions for generating one or more alternate transcripts from the list of close call records by evaluating each record in the list for a match between a partial sub-history of the recognized utterance and one of the histories stored in the record, and upon finding such a match, substituting the other of the histories stored in the record for the partial sub-history in the recognized transcript.

In the same field of word-by-word recognition, Baker teaches:

instructions for generating a list of close call records, wherein each record includes history information and scoring information associated with a particular pair of partial hypotheses (The choice list generator 14 couples to the data string memory 12 and generates a plurality of choice words 20. The system 10 offers the list of choice words 20, as possible substitutes for the current word 38 being analyzed by the system 10; column 9 line 10; Baker.);

instructions for generating one or more alternate transcripts from the list of close call records by evaluating each record in the list for a match between a partial sub-history of the recognized utterance and one of the histories stored in the record, and upon finding such a match, substituting the other of the histories stored in the record for the partial sub-history in the recognized transcript (The current word 38 being recognized can be transferred via the bus interface 48 to the processing unit 48. The processing unit 48 can, in one example, analyze the known information about the current word 38 to select choice words 20A-20E from the vocabulary memory 50; column 13, line 18. Alternatively, the word recognition system 10 can select the choice word 20 with the highest probability signal 28 or rank signal 30 to substitute for the current word 38 currently being recognized; column 17, line 24.).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the word substitutions of Baker with the String candidate generation method of Chen in order to allow for substitutions of words that may have been misinterpreted in the transcription process.

27. Consider claim 33, Chen teaches a computer readable medium including stored instructions adapted for execution on a processor (a computer readable medium is inherent to enable the method), comprising:

instructions for generate an alternative version of the transcript (Then, the node sets with relative high string scores are selected to connect the nodes by their starting

time frame and ending time frame, thereby generating the candidate word strings, abstract.); and,

instructions for adding the alternative version of the transcript to the choice list (Then, the node sets with relative high string scores are selected to connect the nodes by their starting time frame and ending time frame, thereby generating the candidate word strings, abstract. Multiple strings are generated, see table 1.).

But Chen does not specifically teach:

instructions for during speech recognition, generating a list of close call records, wherein each record includes histories for each of two competing partial hypotheses;

instructions for initializing the close call list from at least one output of the speech recognition system;

instructions for selecting one of the close call records from the list of close call records;

instructions for selecting a transcript from the choice list;

instructions for determining whether one of the two histories for the selected record matches a partial subhistory of the transcript from the choice list;

if one of the two histories for the selected close call record matches a partial subhistory of the transcript, substituting the other of the two histories for the partial subhistory of the transcript to generate an alternative string candidate.

In the same field of word-by-word speech recognition, Baker teaches:

instructions for during speech recognition, generating a list of close call records, wherein each record includes histories for each of two competing partial hypotheses

(The choice list generator 14 couples to the data string memory 12 and generates a plurality of choice words 20. The system 10 offers the list of choice words 20, as possible substitutes for the current word 38 being analyzed by the system 10; column 9 line 10.);

instructions for initializing the close call list from at least one output of the speech recognition system (The choice list generator 14 couples to the data string memory 12 and generates a plurality of choice words 20. The system 10 offers the list of choice words 20, as possible substitutes for the current word 38 being analyzed by the system 10; column 9 line 10. The list must be initialized when considered a word in the string.);

instructions for selecting one of the close call records from the list of close call records (A record from the choice word list of Baker must inherently be selected in order to substitute.);

instructions for selecting a transcript from the choice list (an utterance must inherently be selected in order to replace words in it);

instructions for determining whether one of the two histories for the selected record matches a partial subhistory of the transcript from the choice list (The current word 38 being recognized can be transferred via the bus interface 48 to the processing unit 48. The processing unit 48 can, in one example, analyze the known information about the current word 38 to select choice words 20A-20E from the vocabulary memory 50; column 13, line 18.);

instructions for if one of the two histories for the selected close call record matches a partial subhistory of the transcript, substituting the other of the two histories

for the partial subhistory of the transcript to generate an alternative string candidate (Alternatively, the word recognition system 10 can select the choice word 20 with the highest probability signal 28 or rank signal 30 to substitute for the current word 38 currently being recognized; column 17, line 24.).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the word substitutions of Baker with the String candidate generation method of Chen in order to allow for substitutions of words that may have been misinterpreted in the transcription process.

28. Claims 10, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Baker as applied to claim 1 above, and further in view of Olsen et al (US Patent 6,754,625).

29. Consider claim 10, Chen in view of Baker teaches the method of claim 1, but does not specifically teach further including limiting the list of close call records to a preset maximum number of close call records.

In the same field of determining alternative words, Olsen teaches limiting the list of close call records to a preset maximum number of close call records (Figure 4, step 416, restrict number of words added to list based on maximum number of words in list.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the limits of Olsen with the speech recognition of Chen and Baker in order to provide a method of preventing overflow of limited memory resources.

30. Consider claim 18, Chen in view of Baker teaches a method according to claim 16, but does not specifically teach further including limiting the list of close call records to a preset maximum number of records.

In the same field of determining alternative words, Olsen teaches limiting the list of close call records to a preset maximum number of close call records (Figure 4, step 416, restrict number of words added to list based on maximum number of words in list.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the limits of Olsen with the speech recognition of Chen and Baker in order to provide a method of preventing overflow of limited memory resources.

31. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Baker as applied to claim30 above, and further in view of Shon (US Patent 6,418,328).

32. Consider claim 31, Chen and Baker teach the computer readable medium of claim 30, but does not teach specifically wherein the medium is disposed within a mobile telephone apparatus and operates in conjunction with a user interface.

In the same field of speech recognition Shon teaches using a computer readable medium for speech recognition disposed within a mobile telephone apparatus and operates in conjunction with a user interface (A voice dialing method in a mobile telephone terminal. Upon reception of the dialing utterance, it is determined whether

there are one or more pre-registered dialing utterances similar to an input dialing utterance within a first similarity value. If there are more than one dialing utterances within the first similarity value, it is determined whether there is a pre-registered dialing utterance similar to the input dialing utterance within a second similarity value higher than the first similarity value. If there is no dialing utterance within the second similarity value, names represented by the dialing utterances within the first similarity value are displayed. If a user selects one of the displayed names, a registered telephone number corresponding to the selected name is dialed, abstract).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the speech recognition of Baker and Chin with the telephone of Shon in order to provide the phone with a more robust method of speech recognition for voice dialing.

33. Consider claim 32, Chen and Baker teach the computer readable medium of claim 30, but does not teach specifically wherein the medium is disposed within a handheld electronic apparatus and operates in conjunction with a user interface.

In the same field of speech recognition Shon teaches using a computer readable medium for speech recognition disposed within a mobile telephone apparatus and operates in conjunction with a user interface (A voice dialing method in a mobile telephone terminal. Upon reception of the dialing utterance, it is determined whether there are one or more pre-registered dialing utterances similar to an input dialing utterance within a first similarity value. If there are more than one dialing utterances

within the first similarity value, it is determined whether there is a pre-registered dialing utterance similar to the input dialing utterance within a second similarity value higher than the first similarity value. If there is no dialing utterance within the second similarity value, names represented by the dialing utterances within the first similarity value are displayed. If a user selects one of the displayed names, a registered telephone number corresponding to the selected name is dialed, abstract).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the speech recognition of Baker and Chin with the telephone of Shon in order to provide the phone with a more robust method of speech recognition for voice dialing.

Allowable Subject Matter

34. Claims 7-9, 11 and 12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

35. Consider claim 7, Chen in view of Baker suggests the method of claim 1, but does not fairly suggest further including generating a list of close call records wherein each of the close call records includes a close call score difference between the competing hypotheses, the score difference being used to construct the choice list, nor

can the prior art of record be combined to fairly duplicate these limitations. Therefore claim 7 has allowable subject matter when combined with the limitations of claim 1.

36. Claims 8 and 9 are contain allowable subject matter as they are dependent of claim 7.

37. Consider claim 11, Chen in view of Baker further in view of Olsen suggests the method of claim 10, further including with each of the close call records, a close call score difference between the competitor hypothesis and the score of the globally best hypothesis at the time the close call record is added, the close call score difference being used to determine which close calls to keep if the preset number of close call records is reached nor can the prior art of record be combined to fairly duplicate these limitations. Therefore claim 11 has allowable subject matter when combined with the limitations of claim 10.

38. Consider claim 12, Chen in view of Baker suggests the method of claim 1, but does not fairly suggest further including with each of the close call records, a first score and a second score, the first score being a close call score difference between the competing hypotheses, the second score being a global score difference between the competitor hypothesis and the score of a globally best hypothesis at the time the record is added, wherein the close call difference is used to construct the choice list, and the global score difference is used to determine which close calls to keep if the preset

number of close call records is reached nor can the prior art of record be combined to fairly duplicate these limitations. Therefore claim 12 has allowable subject matter when combined with the limitations of claim 1.

39. Claims 19 - 25, and 27 are allowed.

40. Consider claim 19, Chen in view of Baker teaches a method according to claim 16, further including storing in the close call list for each pair of partial hypotheses seeding a common word (i) a history of a first partial hypothesis, (ii) a history of a second partial hypothesis (figure 1 of Chen shows nodes N2 and N6 with history nodes behind them), but does not fairly suggest (iii) a score difference being a difference between a score of the first partial hypothesis and a score of the second partial hypothesis, and (iv) a global score nor can the prior art of record be combined to fairly duplicate these limitations. Therefore claim 19 has allowable subject matter when combined with the limitations of claim 16.

41. Consider claim 20, Chen in view of Baker a method of constructing a list of alternate transcripts from a recognized transcript, comprising:

providing two or more partial hypotheses of an acoustic transcript;

for each pair of partial hypotheses characterized by a first partial hypothesis having an associated first score and a second partial hypothesis having an associated second score being less than the first score, both ending at a common time and both

seeding a common continuation word, evaluating the first partial hypothesis and the second partial hypothesis at each acoustic frame following the seeding of the common continuation word, and storing in a close call list a record of the first and second partial hypotheses, the record corresponding to the acoustic frame resulting in a smallest score difference between a current best overall scoring hypothesis and the second score, wherein the record includes at least (i) a history of the first partial hypothesis, (ii) a history of the second partial hypothesis and,

generating one or more alternate hypotheses by combining information from at least one record in the close call list with the recognized transcript (see rejection of claim 16),

But Chen in view of Baker does not fairly suggest:

(iii) a score difference being a difference between the first score and the second score, and (iv) a global score difference being a difference between the current best overall scoring hypothesis and the second score; nor can the prior art of record be combined to fairly duplicate these limitations. Therefore claim 12 has allowable subject matter.

42. Consider claim 21 Chen in view of Baker teaches a method of constructing a list of alternate utterance hypotheses from a complete utterance hypothesis, comprising:

providing two or more partial hypotheses of an acoustic utterance;

for each pair of partial hypotheses characterized by a first partial hypothesis having an associated first score and a second partial hypothesis having an associated second score being less than the first score, both ending at a common time and both seeding a common continuation word, evaluating the first partial hypothesis and the second partial hypothesis at each acoustic frame following the seeding of the common continuation word, and storing in a close call list a record of the first and second partial hypotheses, the record corresponding to the acoustic frame resulting in a smallest score difference between a current best overall scoring hypothesis and the second score, wherein the record includes at least (i) a history of the first partial hypothesis, (ii) a history of the second partial hypothesis, (see claim 16 rejection).

But Baker and Chen does not fairly suggest:

(iii) a score difference being a difference between the first score and the second score, and (iv) a global score difference being a difference between the current best overall scoring hypothesis and the second score;

for each acoustic frame, updating the two or more partial hypotheses until the acoustic utterance ends, and selecting a best scoring complete hypothesis;

evaluating the records in the close call list for potential alternate utterance hypotheses, beginning with a record in the close call list having a smallest score difference and subsequently with each record in the close call list in an order of ascending score difference, by:

(i) comparing a set of first words from the first hypothesis and a set of first words from one or more complete hypotheses from a choice list;

(ii) if a set of first words from a history of the first partial hypothesis matches a set of first words from one or more complete hypotheses from the choice list, substituting the history of the second partial hypothesis for the history of the first partial hypothesis within the one or more complete hypotheses from the choice list so as to generate one or more alternate utterance hypotheses, and placing the alternate hypotheses in the choice list; and,

(iii) continuing evaluating the records in the close call list until filling the choice list. The prior art of record cannot be combined to duplicate these limitations, therefore claim 21 is allowed.

43. Claims 22-25 are allowed as the are dependent on claim 21.

44. Consider claim 27, Chen in view of Baker teaches a method according to claim 26, further including storing in the close call list for each pair of partial hypotheses seeding a common word (i) a history of a first partial hypothesis, (ii) a history of a second partial hypothesis (figure 1 of Chen shows nodes N2 and N6 with history nodes behind them), but does not fairly suggest (iii) a score difference being a difference between a score of the first partial hypothesis and a score of the second partial hypothesis, and (iv) a global score nor can the prior art of record be combined to fairly duplicate these limitations. Therefore claim 27 has allowable subject matter when combined with the limitations of claim 26.

Conclusion

45. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is listed on the Notice of References Cited.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas C. Godbold whose telephone number is (571) 270-1451. The examiner can normally be reached on Monday-Thursday 7:00am-4:30pm Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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